

SEQUENCE LISTING



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Baker, Brian
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<120> Methods for Predicting Functional and
Structural Properties of Polypeptides Using Sequence Models

<130> P-TB 5072

<140> US 10/040,895
<141> 2001-12-28

<150> US 09/753,020
<151> 2000-12-29

<160> 17

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 155
<212> PRT
<213> Homo sapiens

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1 5 10 15
Thr Gly Lys Val Lys Pro Gly Ser Thr Cys Val Val Phe Gly Leu Gly
20 25 30
Gly Val Gly Leu Ser Val Ile Met Gly Cys Lys Ser Ala Gly Ala Ser
35 40 45
Arg Ile Ile Gly Ile Asp Leu Asn Lys Asp Lys Phe Glu Lys Ala Met
50 55 60
Ala Val Gly Ala Thr Glu Cys Ile Ser Pro Lys Asp Ser Thr Lys Pro
65 70 75 80
Ile Ser Glu Val Leu Ser Glu Met Thr Gly Asn Asn Val Gly Tyr Thr
85 90 95
Phe Glu Val Ile Gly His Leu Glu Thr Met Ile Asp Ala Leu Ala Ser
100 105 110
Cys His Met Asn Tyr Gly Thr Ser Val Val Val Gly Val Pro Pro Ser
115 120 125
Ala Lys Met Leu Thr Tyr Asp Pro Met Leu Leu Phe Thr Gly Arg Thr
130 135 140
Trp Lys Gly Cys Val Phe Gly Gly Leu Lys Ser
145 150 155

<210> 2
<211> 152

<212> PRT

<213> *Equus caballus*

<400> 2

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Gly Cys Gly Phe Ser Thr Gly Tyr Gly Ser Ala Val Lys Val Ala Lys
1 5 10 15
Val Thr Gln Gly Ser Thr Cys Ala Val Phe Gly Leu Gly Gly Val Gly
20 25 30
Leu Ser Val Ile Met Gly Cys Lys Ala Ala Gly Ala Ala Arg Ile Ile
35 40 45
Gly Val Asp Ile Asn Lys Asp Lys Phe Ala Lys Ala Lys Glu Val Gly
50 55 60
Ala Thr Glu Cys Val Asn Pro Gln Asp Tyr Lys Lys Pro Ile Gln Glu
65 70 75 80
Val Leu Thr Glu Met Ser Asn Gly Gly Val Asp Phe Ser Phe Glu Val
85 90 95
Ile Gly Arg Leu Asp Thr Met Val Thr Ala Leu Ser Cys Cys Gln Glu
100 105 110
Ala Tyr Gly Val Ser Val Ile Val Gly Val Pro Pro Asp Ser Gln Asn
115 120 125
Leu Ser Met Asn Pro Met Leu Leu Leu Ser Gly Arg Thr Trp Lys Gly
130 135 140
Ala Ile Phe Gly Gly Phe Lys Ser
145 150

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<210> 3

<211> 175

<212> PRT

<213> Thermoanaerobium Brockii

<400> 3

Val	Met	Ile	Pro	Asp	Met	Met	Thr	Thr	Gly	Phe	His	Gly	Ala	Glu	Leu
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Ala	Asp	Ile	Glu	Leu	Gly	Ala	Thr	Val	Ala	Val	Leu	Gly	Ile	Gly	Pro
						20			25					30	
Val	Gly	Leu	Met	Ala	Val	Ala	Gly	Ala	Lys	Leu	Arg	Gly	Ala	Gly	Arg
						35			40					45	
Ile	Ile	Ala	Val	Gly	Ser	Arg	Pro	Val	Cys	Val	Asp	Ala	Ala	Lys	Tyr
						50			55					60	
Tyr	Gly	Ala	Thr	Asp	Ile	Val	Asn	Tyr	Lys	Asp	Gly	Pro	Ile	Glu	Ser
						65			70					75	
Gln	Ile	Met	Asn	Leu	Thr	Glu	Gly	Lys	Gly	Val	Asp	Ala	Ala	Ile	Ile
						85				90				95	
Ala	Gly	Gly	Asn	Ala	Asp	Ile	Met	Ala	Thr	Ala	Val	Lys	Ile	Val	Lys
						100			105					110	
Pro	Gly	Gly	Thr	Ile	Ala	Asn	Val	Asn	Tyr	Phe	Gly	Glu	Gly	Glu	Val
							115			120				125	
Leu	Pro	Val	Pro	Arg	Leu	Glu	Trp	Gly	Cys	Gly	Met	Ala	His	Lys	Thr
						130			135					140	
Ile	Lys	Gly	Gly	Leu	Cys	Pro	Gly	Gly	Arg	Leu	Arg	Met	Glu	Arg	Leu
						145			150					155	
Ile	Asp	Leu	Val	Phe	Tyr	Lys	Arg	Val	Asp	Pro	Ser	Lys	Leu	Val	

165

170

175

<210> 4
<211> 141
<212> PRT
<213> Lactobacillus confusus

<400> 4
Ala Arg Lys Ile Gly Ile Ile Gly Leu Gly Asn Val Gly Ala Ala Val
1 5 10 15
Ala His Gly Leu Ile Ala Gln Gly Val Ala Asp Asp Tyr Val Phe Ile
20 25 30
Asp Ala Asn Glu Ala Lys Val Lys Ala Asp Gln Ile Asp Phe Gln Asp
35 40 45
Ala Met Ala Asn Leu Glu Ala His Gly Asn Ile Val Ile Asn Asp Trp
50 55 60
Ala Ala Leu Ala Asp Ala Asp Val Val Ile Ser Thr Leu Gly Asn Ile
65 70 75 80
Lys Leu Gln Gln Phe Ala Glu Leu Lys Phe Thr Ser Ser Met Val Gln
85 90 95
Ser Val Gly Thr Asn Leu Lys Glu Ser Gly Phe His Gly Val Leu Val
100 105 110
Val Ile Ser Asn Pro Val Asp Val Ile Thr Ala Leu Phe Gln His Val
115 120 125
Thr Gly Phe Pro Ala His Lys Val Ile Gly Thr Gly Thr
130 135 140

<210> 5
<211> 147
<212> PRT
<213> B. Stearothermophilus

<400> 5
Met Lys Asn Asn Gly Gly Ala Arg Val Val Val Ile Gly Ala Gly Phe
1 5 10 15
Val Gly Ala Ser Tyr Val Phe Ala Leu Met Asn Gln Gly Ile Ala Asp
20 25 30
Glu Ile Val Leu Ile Asp Ala Asn Glu Ser Lys Ala Ile Gly Asp Ala
35 40 45
Met Asp Phe Asn His Gly Lys Val Phe Ala Pro Lys Pro Val Asp Ile
50 55 60
Trp His Gly Asp Tyr Asp Asp Cys Arg Asp Ala Asp Leu Val Val Ile
65 70 75 80
Cys Ala Gly Ala Asn Gln Lys Pro Gly Glu Thr Arg Leu Asp Leu Val
85 90 95
Asp Lys Asn Ile Ala Ile Phe Arg Ser Ile Val Glu Ser Val Met Ala
100 105 110
Ser Gly Phe Gln Gly Leu Phe Leu Val Ala Thr Asn Pro Val Asp Ile
115 120 125
Leu Thr Tyr Ala Thr Trp Lys Phe Ser Gly Leu Pro His Glu Arg Val
130 135 140

Ile Gly Ser
145

<210> 6
<211> 312
<212> PRT
<213> E. Coli

<400> 6
Met Lys Val Ala Val Leu Gly Ala Ala Gly Gly Ile Gly Gln Ala Leu
1 5 10 15
Ala Leu Leu Leu Lys Thr Gln Leu Pro Ser Gly Ser Glu Leu Ser Leu
20 25 30
Tyr Asp Ile Ala Pro Val Thr Pro Gly Val Ala Val Asp Leu Ser His
35 40 45
Ile Pro Thr Ala Val Lys Ile Lys Gly Phe Ser Gly Glu Asp Ala Thr
50 55 60
Pro Ala Leu Glu Gly Ala Asp Val Val Leu Ile Ser Ala Gly Val Arg
65 70 75 80
Arg Lys Pro Gly Met Asp Arg Ser Asp Leu Phe Asn Val Asn Ala Gly
85 90 95
Ile Val Lys Asn Leu Val Gln Gln Val Ala Lys Thr Cys Pro Lys Ala
100 105 110
Cys Ile Gly Ile Ile Thr Asn Pro Val Asn Thr Thr Val Ala Ile Ala
115 120 125
Ala Glu Val Leu Lys Lys Ala Gly Val Tyr Asp Lys Asn Lys Leu Phe
130 135 140
Gly Val Thr Thr Leu Asp Ile Ile Arg Ser Asn Thr Phe Val Ala Glu
145 150 155 160
Leu Lys Gly Lys Gln Pro Gly Glu Val Glu Val Pro Val Ile Gly Gly
165 170 175
His Ser Gly Val Thr Ile Leu Pro Leu Leu Ser Gln Val Pro Gly Val
180 185 190
Ser Phe Thr Glu Gln Glu Val Ala Asp Leu Thr Lys Arg Ile Gln Asn
195 200 205
Ala Gly Thr Glu Val Val Glu Ala Lys Ala Gly Gly Ser Ala Thr
210 215 220
Leu Ser Met Gly Gln Ala Ala Ala Arg Phe Gly Leu Ser Leu Val Arg
225 230 235 240
Ala Leu Gln Gly Glu Gln Gly Val Val Glu Cys Ala Tyr Val Glu Gly
245 250 255
Asp Gly Gln Tyr Ala Arg Phe Phe Ser Gln Pro Leu Leu Leu Gly Lys
260 265 270
Asn Gly Val Glu Glu Arg Lys Ser Ile Gly Thr Leu Ser Ala Phe Glu
275 280 285
Gln Asn Ala Leu Glu Gly Met Leu Asp Thr Leu Lys Lys Asp Ile Ala
290 295 300
Leu Gly Gln Glu Phe Val Asn Lys
305 310

<210> 7

<211> 163
<212> PRT
<213> Sus scrofa

<400> 7
Ala Thr Leu Lys Asp Gln Leu Ile His Asn Leu Leu Lys 'Glu Glu His
1 5 10 15
Val Pro His Asn Lys Ile Thr Val Val Gly Val Gly Ala Val Gly Met
20 25 30
Ala Cys Ala Ile Ser Ile Leu Met Lys Glu Leu Ala Asp Glu Ile Ala
35 40 45
Leu Val Asp Val Met Glu Asp Lys Leu Lys Gly Glu Met Met Asp Leu
50 55 60
Gln His Gly Ser Leu Phe Leu Arg Thr Pro Lys Ile Val Ser Gly Lys
65 70 75 80
Asp Tyr Asn Val Thr Ala Asn Ser Arg Leu Val Val Ile Thr Ala Gly
85 90 95
Ala Arg Gln Gln Glu Gly Glu Ser Arg Leu Asn Leu Val Gln Arg Asn
100 105 110
Val Asn Ile Phe Lys Phe Ile Ile Pro Asn Ile Val Lys Tyr Ser Pro
115 120 125
Asn Cys Lys Leu Leu Val Val Ser Asn Pro Val Asp Ile Leu Thr Tyr
130 135 140
Val Ala Trp Lys Ile Ser Gly Phe Pro Lys Asn Arg Val Ile Gly Ser
145 150 155 160
Gly Cys Asn

<210> 8
<211> 333
<212> PRT
<213> Sus scrofa

<400> 8
Ser Glu Pro Ile Arg Val Leu Val Thr Gly Ala Ala Gly Gln Ile Ala
1 5 10 15
Tyr Ser Leu Leu Tyr Ser Ile Gly Asn Gly Ser Val Phe Gly Lys Asp
20 25 30
Gln Pro Ile Ile Leu Val Leu Leu Asp Ile Thr Pro Met Met Gly Val
35 40 45
Leu Asp Gly Val Leu Met Glu Leu Gln Asp Cys Ala Leu Pro Leu Leu
50 55 60
Lys Asp Val Ile Ala Thr Asp Lys Glu Glu Ile Ala Phe Lys Asp Leu
65 70 75 80
Asp Val Ala Ile Leu Val Gly Ser Met Pro Arg Arg Asp Gly Met Glu
85 90 95
Arg Lys Asp Leu Leu Lys Ala Asn Val Lys Ile Phe Lys Cys Gln Gly
100 105 110
Ala Ala Leu Asp Lys Tyr Ala Lys Lys Ser Val Lys Val Ile Val Val
115 120 125
Gly Asn Pro Ala Asn Thr Asn Cys Leu Thr Ala Ser Lys Ser Ala Pro
130 135 140

Ser Ile Pro Lys Glu Asn Phe Ser Cys Leu Thr Arg Leu Asp His Asn
145 150 155 160
Arg Ala Lys Ala Gln Ile Ala Leu Lys Leu Gly Val Thr Ser Asp Asp
165 170 175
Val Lys Asn Val Ile Ile Trp Gly Asn His Ser Ser Thr Gln Tyr Pro
180 185 190
Asp Val Asn His Ala Lys Val Lys Leu Gln Ala Lys Glu Val Gly Val
195 200 205
Tyr Glu Ala Val Lys Asp Asp Ser Trp Leu Lys Gly Glu Phe Ile Thr
210 215 220
Thr Val Gln Gln Arg Gly Ala Ala Val Ile Lys Ala Arg Lys Leu Ser
225 230 235 240
Ser Ala Met Ser Ala Ala Lys Ala Ile Cys Asp His Val Arg Asp Ile
245 250 255
Trp Phe Gly Thr Pro Glu Gly Glu Phe Val Ser Met Gly Ile Ile Ser
260 265 270
Asp Gly Asn Ser Tyr Gly Val Pro Asp Asp Leu Leu Tyr Ser Phe Pro
275 280 285
Val Thr Ile Lys Asp Lys Thr Trp Lys Ile Val Glu Gly Leu Pro Ile
290 295 300
Asn Asp Phe Ser Arg Glu Lys Met Asp Leu Thr Ala Lys Glu Leu Ala
305 310 315 320
Glu Glu Lys Glu Thr Ala Phe Glu Phe Leu Ser Ser Ala
325 330

<210> 9
<211> 159
<212> PRT
<213> Thermus Flavis

<400> 9
Met Lys Ala Pro Val Arg Val Ala Val Thr Gly Ala Ala Gly Gln Ile
1 5 10 15
Gly Tyr Ser Leu Leu Phe Arg Ile Ala Ala Gly Glu Met Leu Gly Lys
20 25 30
Asp Gln Pro Val Ile Leu Gln Leu Leu Glu Ile Pro Gln Ala Met Lys
35 40 45
Ala Leu Glu Gly Val Val Met Glu Leu Glu Asp Cys Ala Phe Pro Leu
50 55 60
Leu Ala Gly Leu Glu Ala Thr Asp Asp Pro Asp Val Ala Phe Lys Asp
65 70 75 80
Ala Asp Tyr Ala Leu Leu Val Gly Ala Ala Pro Arg Lys Ala Gly Met
85 90 95
Glu Arg Arg Asp Leu Leu Gln Val Asn Gly Lys Ile Phe Thr Glu Gln
100 105 110
Gly Arg Ala Leu Ala Glu Val Ala Lys Lys Asp Val Lys Val Leu Val
115 120 125
Val Gly Asn Pro Ala Asn Thr Asn Ala Leu Ile Ala Tyr Lys Asn Ala
130 135 140
Pro Gly Leu Asn Pro Arg Asn Phe Thr Ala Met Thr Arg Leu Asp
145 150 155

<210> 10
<211> 200
<212> PRT
<213> E. coli

<400> 10
Pro Phe Ser Asn Thr Arg Ser Val Ala Glu Leu Val Ile Gly Glu Leu
1 5 10 15
Leu Leu Leu Leu Arg Gly Val Pro Glu Ala Asn Ala Lys Ala His Arg
20 25 30
Gly Val Trp Asn Lys Leu Ala Ala Gly Ser Phe Glu Ala Arg Gly Lys
35 40 45
Lys Leu Gly Ile Ile Gly Tyr Gly His Ile Gly Thr Gln Leu Gly Ile
50 55 60
Leu Ala Glu Ser Leu Gly Met Tyr Val Tyr Phe Tyr Asp Ile Glu Asn
65 70 75 80
Lys Leu Pro Leu Gly Asn Ala Thr Gln Val Gln His Leu Ser Asp Leu
85 90 95
Leu Asn Met Ser Asp Val Val Ser Leu His Val Pro Glu Asn Pro Ser
100 105 110
Thr Lys Asn Met Met Gly Ala Lys Glu Ile Ser Leu Met Lys Pro Gly
115 120 125
Ser Leu Leu Ile Asn Ala Ser Arg Gly Thr Val Val Asp Ile Pro Ala
130 135 140
Leu Cys Asp Ala Leu Ala Ser Lys His Leu Ala Gly Ala Ala Ile Asp
145 150 155 160
Val Phe Pro Thr Glu Pro Ala Thr Asn Ser Asp Pro Phe Thr Ser Pro
165 170 175
Leu Cys Glu Phe Asp Asn Val Leu Leu Thr Pro His Ile Gly Gly Ser
180 185 190
Thr Gln Glu Ala Gln Glu Asn Ile
195 200

<210> 11
<211> 236
<212> PRT
<213> L. casei

<400> 11
Ser Asn Val Pro Ala Tyr Ser Pro Ala Ala Ile Ala Glu Phe Ala Leu
1 5 10 15
Thr Asp Thr Leu Tyr Leu Leu Arg Asn Met Gly Lys Val Gln Ala Gln
20 25 30
Leu Gln Ala Gly Asp Tyr Glu Lys Ala Gly Thr Phe Ile Gly Lys Glu
35 40 45
Leu Gly Gln Gln Thr Val Gly Val Met Gly Thr Gly His Ile Gly Gln
50 55 60
Val Ala Ile Lys Leu Phe Lys Gly Phe Gly Ala Lys Val Ile Ala Tyr
65 70 75 80
Asp Pro Tyr Pro Met Lys Gly Asp His Pro Asp Phe Asp Tyr Val Ser
85 90 95

Leu	Glu	Asp	Leu	Phe	Lys	Gln	Ser	Asp	Val	Ile	Asp	Leu	His	Val	Pro
100								105					110		
Gly	Ile	Glu	Gln	Asn	Thr	His	Ile	Ile	Asn	Glu	Ala	Ala	Phe	Asn	Leu
115							120					125			
Met	Lys	Pro	Gly	Ala	Ile	Val	Ile	Asn	Thr	Ala	Arg	Pro	Asn	Leu	Ile
130					135					140					
Asp	Thr	Gln	Ala	Met	Leu	Ser	Asn	Leu	Lys	Ser	Gly	Lys	Leu	Ala	Gly
145					150				155			160			
Val	Gly	Ile	Asp	Thr	Tyr	Glu	Tyr	Glu	Asp	Leu	Leu	Asn	Leu		
	165					170					175				
Ala	Lys	His	Gly	Ser	Phe	Lys	Asp	Pro	Leu	Trp	Asp	Glu	Leu	Leu	Gly
	180					185					190				
Met	Pro	Asn	Val	Val	Leu	Ser	Pro	His	Ile	Ala	Tyr	Tyr	Thr	Glu	Thr
	195					200					205				
Ala	Val	His	Asn	Met	Val	Tyr	Phe	Ser	Leu	Gln	His	Leu	Val	Asp	Phe
	210					215					220				
Leu	Thr	Lys	Gly	Glu	Thr	Ser	Thr	Glu	Val	Thr	Gly				
	225				230					235					

<210> 12

<211> 192

<212> PRT

<213> Methylotrophic bacterium pseudomonas sp.

<400> 12

Cys	Asn	Ser	Ile	Ser	Val	Ala	Glu	His	Val	Val	Met	Met	Ile	Leu	Ser
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Leu	Val	Arg	Asn	Tyr	Leu	Pro	Ser	His	Glu	Trp	Ala	Arg	Lys	Gly	Gly
		20					25					30			
Trp	Asn	Ile	Ala	Asp	Cys	Val	Ser	His	Ala	Tyr	Asp	Leu	Glu	Ala	Met
		35				40					45				
His	Val	Gly	Thr	Val	Ala	Ala	Gly	Arg	Ile	Gly	Leu	Ala	Val	Leu	Arg
		50				55					60				
Arg	Leu	Ala	Pro	Phe	Asp	Val	His	Leu	His	Tyr	Thr	Asp	Arg	His	Arg
	65				70				75			80			
Leu	Pro	Glu	Ser	Val	Glu	Lys	Glu	Leu	Asn	Leu	Thr	Trp	His	Ala	Thr
		85				90					95				
Arg	Glu	Asp	Met	Tyr	Pro	Val	Cys	Asp	Val	Val	Thr	Leu	Asn	Cys	Pro
		100				105					110				
Leu	His	Pro	Glu	Thr	Glu	His	Met	Ile	Asn	Asp	Glu	Thr	Leu	Lys	Leu
		115				120					125				
Phe	Lys	Arg	Gly	Ala	Tyr	Ile	Val	Asn	Thr	Ala	Arg	Gly	Lys	Leu	Cys
		130				135					140				
Asp	Arg	Asp	Ala	Val	Ala	Arg	Ala	Leu	Glu	Ser	Gly	Arg	Leu	Ala	Gly
	145				150					155		160			
Tyr	Ala	Gly	Asp	Val	Trp	Phe	Pro	Gln	Pro	Ala	Pro	Lys	Asp	His	Pro
		165				170					175				
Trp	Arg	Thr	Met	Pro	Tyr	Asn	Gly	Met	Thr	Pro	His	Ile	Ser	Gly	Thr
		180				185					190				

<210> 13

<211> 131
<212> PRT
<213> Homo sapiens

<400> 13
Pro Cys Thr Pro Lys Gly Cys Leu Glu Leu Ile Lys Glu Thr Gly Val
1 5 10 15
Pro Ile Ala Gly Arg His Ala Val Val Val Gly Arg Ser Lys Ile Val
20 25 30
Gly Ala Pro Met His Asp Leu Leu Leu Trp Asn Asn Ala Thr Val Thr
35 40 45
Thr Cys His Ser Lys Thr Ala His Leu Asp Glu Glu Val Asn Lys Gly
50 55 60
Asp Ile Leu Val Val Ala Thr Gly Gln Pro Glu Met Val Lys Gly Glu
65 70 75 80
Trp Ile Lys Pro Gly Ala Ile Val Ile Asp Cys Gly Ile Asn Tyr Lys
85 90 95
Val Val Gly Asp Val Ala Tyr Asp Glu Ala Lys Glu Arg Ala Ser Phe
100 105 110
Ile Thr Pro Val Pro Gly Val Gly Pro Met Thr Val Ala Met Leu
115 120 125
Met Gln Ser
130

<210> 14
<211> 170
<212> PRT
<213> Rattus sp.

<400> 14
Lys Phe Asp Asn Leu Tyr Gly Cys Arg Glu Ser Leu Ile Asp Gly Ile
1 5 10 15
Lys Arg Ala Thr Asp Val Met Ile Ala Gly Lys Val Ala Val Val Ala
20 25 30
Gly Tyr Gly Asp Val Gly Lys Gly Cys Ala Gln Ala Leu Arg Gly Phe
35 40 45
Gly Ala Arg Val Ile Ile Thr Glu Ile Asp Pro Ile Asn Ala Leu Gln
50 55 60
Ala Ala Met Glu Gly Tyr Glu Val Thr Thr Met Asp Glu Ala Cys Lys
65 70 75 80
Glu Gly Asn Ile Phe Val Thr Thr Gly Cys Val Asp Ile Ile Leu
85 90 95
Gly Arg His Phe Glu Gln Met Lys Asp Asp Ala Ile Val Cys Asn Ile
100 105 110
Gly His Phe Asp Val Glu Ile Asp Val Lys Trp Leu Asn Glu Asn Ala
115 120 125
Val Glu Lys Val Asn Ile Lys Pro Gln Val Asp Arg Tyr Leu Leu Lys
130 135 140
Asn Gly His Arg Ile Ile Leu Leu Ala Glu Gly Arg Leu Val Asn Leu
145 150 155 160
Gly Cys Ala Met Gly His Pro Ser Phe Val
165 170

<210> 15
<211> 179
<212> PRT
<213> Phormidium lapideum

<400> 15

Thr	Pro	Met	Ser	Ile	Ile	Ala	Gly	Arg	Leu	Ser	Val	Gln	Phe	Gly	Ala
1				5					10						15
Arg	Phe	Leu	Glu	Arg	Gln	Gln	Gly	Gly	Arg	Gly	Val	Leu	Leu	Gly	Gly
					20				25					30	
Val	Pro	Gly	Val	Lys	Pro	Gly	Lys	Val	Val	Ile	Leu	Gly	Gly	Gly	Val
					35			40				45			
Val	Gly	Thr	Glu	Ala	Ala	Lys	Met	Ala	Val	Gly	Leu	Gly	Ala	Gln	Val
					50			55			60				
Gln	Ile	Phe	Asp	Ile	Asn	Val	Glu	Arg	Leu	Ser	Tyr	Leu	Glu	Thr	Leu
					65			70			75			80	
Phe	Gly	Ser	Arg	Val	Glu	Leu	Leu	Tyr	Ser	Asn	Ser	Ala	Glu	Ile	Glu
					85			90					95		
Thr	Ala	Val	Ala	Glu	Ala	Asp	Leu	Leu	Ile	Gly	Ala	Val	Leu	Val	Pro
					100			105			110				
Gly	Arg	Arg	Ala	Pro	Ile	Leu	Val	Pro	Ala	Ser	Leu	Val	Glu	Gln	Met
					115			120			125				
Arg	Thr	Gly	Ser	Val	Ile	Val	Asp	Val	Ala	Val	Asp	Gln	Gly	Gly	Cys
					130			135			140				
Val	Glu	Thr	Leu	His	Pro	Thr	Ser	His	Thr	Gln	Pro	Thr	Tyr	Glu	Val
					145			150			155			160	
Phe	Gly	Val	Val	His	Tyr	Gly	Val	Pro	Asn	Met	Pro	Gly	Ala	Val	Pro
					165			170				175			
Trp	Thr	Ala													

<210> 16
<211> 165
<212> PRT
<213> E. coli

<400> 16

Asn	Ile	Arg	Val	Ala	Ile	Ala	Gly	Ala	Gly	Gly	Arg	Met	Gly	Arg	Gln
1					5				10				15		
Leu	Ile	Gln	Ala	Ala	Leu	Ala	Leu	Glu	Gly	Val	Gln	Leu	Gly	Ala	Ala
					20			25			30				
Leu	Glu	Arg	Glu	Gly	Ser	Ser	Leu	Leu	Gly	Ser	Asp	Ala	Gly	Glu	Leu
					35			40			45				
Ala	Gly	Ala	Gly	Lys	Thr	Gly	Val	Thr	Val	Gln	Ser	Ser	Leu	Asp	Ala
					50			55			60				
Val	Lys	Asp	Asp	Phe	Asp	Val	Phe	Ile	Asp	Phe	Thr	Arg	Pro	Glu	Gly
					65			70			75			80	
Thr	Leu	Asn	His	Leu	Ala	Phe	Cys	Arg	Gln	His	Gly	Lys	Gly	Met	Val
					85			90			95				
Ile	Gly	Thr	Thr	Gly	Phe	Asp	Glu	Ala	Gly	Lys	Gln	Ala	Ile	Arg	Asp

100	105	110
Ala Ala Ala Asp Ile Ala Ile Val Phe Ala Ala Asn Phe Ser Val Gly		
115	120	125
Ala Ser Ser Arg Met Thr Phe Ala Asn Gly Ala Val Arg Ser Ala Leu		
130	135	140
Trp Leu Ser Gly Lys Glu Ser Gly Leu Phe Asp Met Arg Asp Val Leu		
145	150	155
Asp Leu Asn Asn Leu		160
	165	

<210> 17
<211> 301
<212> PRT
<213> Homo sapiens

<400> 17		
Leu Ile Gln Phe Glu Asp Phe Gly Asn His Asn Ala Phe Arg Phe Leu		
1	5	10
Arg Lys Tyr Arg Glu Lys Tyr Cys Thr Phe Asn Asp Asp Ile Gln Gly		
20	25	30
Thr Ala Ala Val Ala Leu Ala Gly Leu Leu Ala Ala Gln Lys Val Ile		
35	40	45
Ser Lys Pro Ile Ser Glu His Lys Ile Leu Phe Leu Gly Ala Gly Glu		
50	55	60
Ala Ala Leu Gly Ile Ala Asn Leu Ile Val Ser Val Glu Asn Gly Leu		
65	70	75
Ser Glu Gln Glu Ala Gln Lys Lys Ile Trp Phe Asp Lys Tyr Gly Leu		
85	90	95
Leu Val Lys Gly Arg Lys Ala Lys Ile Asp Ser Tyr Gln Glu Pro Phe		
100	105	110
Thr His Ser Ala Pro Glu Ser Ile Pro Asp Thr Phe Glu Asp Ala Val		
115	120	125
Asn Ile Leu Lys Pro Ser Thr Ile Ile Gly Val Ala Gly Ala Gly Arg		
130	135	140
Leu Phe Thr Pro Asp Val Ile Arg Ala Ala Ser Ile Asn Glu Arg Pro		
145	150	155
Val Ile Phe Ala Leu Ser Asn Pro Thr Ala Gln Ala Glu Cys Thr Ala		
165	170	175
Glu Glu Ala Tyr Thr Leu Thr Glu Gly Arg Cys Leu Phe Ala Ser Gly		
180	185	190
Ser Pro Phe Gly Pro Val Lys Leu Thr Asp Gly Arg Val Phe Thr Pro		
195	200	205
Gly Gln Gly Asn Asn Val Tyr Ile Phe Pro Gly Val Ala Leu Ala Val		
210	215	220
Ile Leu Cys Asn Thr Arg His Ile Ser Asp Ser Val Phe Leu Glu Ala		
225	230	235
Ala Lys Ala Leu Thr Ser Gln Leu Thr Asp Glu Glu Leu Ala Gln Gly		
245	250	255
Arg Leu Tyr Pro Pro Leu Ala Asn Ile Gln Glu Val Ser Ile Asn Ile		
260	265	270
Ala Ile Lys Val Thr Glu Tyr Leu Tyr Ala Asn Lys Ala Phe Arg Tyr		
275	280	285

Pro Glu Pro Glu Asp Lys Ala Lys Tyr Val Lys Glu Arg
290 295 300